



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,680	11/09/2001	Richard C. Chu	POU920000148US1	2926

7590 09/09/2003

Andrew J. Wojnicki, Jr.  
IBM Corporation - M/S P386  
2455 South Road  
Poughkeepsie, NY 12601

EXAMINER

PATEL, NIHIR B

ART UNIT	PAPER NUMBER
----------	--------------

3743

DATE MAILED: 09/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/040,680

Applicant(s)

CHU ET AL.

Examiner

Nihir Patel

Art Unit

3743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on August 25<sup>th</sup>, 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 6-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other:

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's election with traverse of claims 1 is acknowledged. The traversal is on the ground(s) that the examiner has not established that examining all claims as filed would represent a serious burden. This is not found persuasive because the different species would require different searches, which would be a burden on the examiner.

However the examiner agrees with the applicant and claim 1 is considered generic.

This application contains claims 6 through 9 (read on non-elected species ; figure 3) and claim 10 (read on non-elected species; figure 7) drawn to an invention nonelected with traverse in Paper No. 5. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. US Patent No. 5,998,863 in view of Eastman et al. US Patent No. 4,230,173.

Kobayashi discloses the applicant's invention as claimed with the exception of providing a plurality of check valves, each of the check valves being disposed within a fluid flow path in proximity to one of the boiling chamber inlet ports, each of the check valves being oriented to

Art Unit: 3743

allow fluid flow from the tube to the boiling chamber while prohibiting fluid flow from the boiling chamber into the tube.

Eastman discloses a closely coupled two phase heat exchanger that does provide a plurality of check valves, each of the check valves being disposed within a fluid flow path in proximity to one of the boiling chamber inlet ports, each of the check valves being oriented to allow fluid flow from the tube to the boiling chamber while prohibiting fluid flow from the boiling chamber into the tube (see figure 2). Therefore it would be obvious to modify Kobayashi's invention by providing a plurality of check valves, each of the check valves being disposed within a fluid flow path in proximity to one of the boiling chamber inlet ports, each of the check valves being oriented to allow fluid flow from the tube to the boiling chamber while prohibiting fluid flow from the boiling chamber into the tube in order to increase the cooling process.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. US Patent No. 5,998,863 as applied to claims 1 and 2 above, and further in view of Terao et al. US Patent No. 6,005,772.

Kobayashi discloses the applicant's invention as claimed with the exception of providing cooling fluid that is selected from the group consisting of water, brine, and dielectric fluids.

Terao discloses a cooling apparatus for high-temperature medium by boiling and condensing refrigerant. Therefore it would be obvious to modify Kobayashi's invention by providing cooling fluid that is selected from the group consisting of water, brine, and dielectric fluids in order to increase the cooling process.

Art Unit: 3743

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. US Patent No. 5,998,863 as applied to claims 1 through 3 above, and further in view of Berenholz et al. US Patent No. 5,168,919.

Kobayashi discloses the applicant's invention as claimed with the exception providing a dielectric fluid as the refrigerant.

Berenholz discloses an air cooled heat exchanger for multi-chip assemblies that does provide dielectric fluid as the refrigerant. Therefore it would be obvious to modify Kobayashi's invention by providing a dielectric fluid as the refrigerant in order to increase the cooling process.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. US Patent No. 5,998,863 as applied to claims 1 through 4 above, and further in view of Mizuno et al. US Patent No. 5,522,452.

Kobayashi discloses the applicant's invention as claimed with the exception of providing a cooling fluid that is at a pressure below atmospheric pressure.

Mizuno discloses a liquid cooling system for LSI packages that doe provide a cooling fluid that is at a pressure below atmospheric pressure. Therefore it would be obvious to modify Kobayashi's invention by providing a cooling fluid that is at a pressure below atmospheric pressure in order to increase the cooling process.

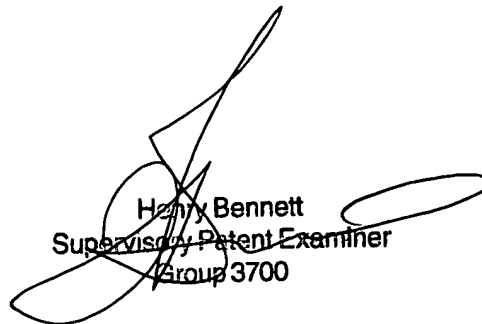
### ***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 3743

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Nihir Patel whose telephone number is (703) 306-3463. The examiner can normally be reached on Monday-Friday from 7:30am to 4:30pm. If attempts to reach the examiner by telephone are unsuccessful the examiner's supervisor Henry Bennett can be reached at (703) 308-0101.

NP  
September 8, 2003



Henry Bennett  
Supervisory Patent Examiner  
Group 3700